

Abstract

A fluid injection system controls the distribution of fluid from a supply line to a selected well at an adjustable rate. A fluid barrier divides a cylinder into first and second chambers. A multi-position valve comprises a first position for passing fluid from the supply line into the first chamber to displace fluid from the second chamber back through the valve to an injection point, and a second position for passing fluid from the supply line to the second chamber to displace fluid from the first chamber back through the valve to the injection point. A control system in communication with a position sensor times displacement of the fluid barrier to selected positions, and selectively adjusts a variable valve opening to adjust flow rate, switch between the first and second positions, and periodically increase the valve opening for cleaning.